FEDERAL COMMUNICATIONS COMMISSION

CLASS OF STATION FM

LCJ

The following application is submitted for action by the Chief, Broadcast Bureau.

ST	FILE NUMBER	CALL	APPLICANT AND LOCATION	NATURE OF APPLICATION
MA	BPED -920326IA	WMBR 88.1MHZ	TECHNOLOGY BROADCASTING CORPORATION CAMBRIDGE MA	CP TO MAKE CHANGES: CHG ERP: 88.1 MHZ

LICENSE EXPIRATION DATE APR 1, 1998

HO. 4-2-92

CHIEF, LICENSE DIVISION

RECOMMENDATION: GRANT( ) CONSTRUCTION DATES, START _____ END _____

CONTESTED ( ) UNCONTESTED ( )

APPROVED _____

FOR CHIEF, BROADCAST BUREAU

F.C.C.-WASHINGTON, D.C.

Form A-378
January 1980

LAW OFFICES

SCHWARTZ, WOODS & MILLER

SUITE 300, THE DUPONT CIRCLE BUILDING

1350 CONNECTICUT AVENUE, N.W.

WASHINGTON, D. C. 20036-1702

CABLE: SWMLAW

202-833-1700

FACSIMILE
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TAX COUNSEL
MARK B. WEINBERG

March 26, 1992

Federal Communications Commission
Washington, D. C. 20554

FCC 340

Approved by OMB
3060-0034
Expires 4/30/92
See Page 23 for information regarding public burden estimate

APPLICATION FOR CONSTRUCTION PERMIT FOR NONCOMMERCIAL EDUCATIONAL BROADCAST STATION

(Carefully read instructions before filing form) Return only form to FCC

MAR 27 11 29 AM '92

RECEIVED

MAR 26 1992

Federal Communications Commission
Office of the Secretary

For Commission Use Only
File No. BPED-920326IA

Section I - GENERAL INFORMATION

1. Name of Applicant			Send notices and communications to the following person at the address below:		
Technology Broadcasting Corporation			Name: Todd Glickman		
Street Address or P.O. Box: c/o WMBR, 3 Ames Street			Street Address or P.O. Box: c/o WMBR, 3 Ames Street		
City: Cambridge	State: MA	ZIP Code: 02142	City: Cambridge	State: MA	ZIP Code: 02142
Telephone No. (Include Area Code): (617)253-4000			Telephone No. (Include Area Code): (617)253-4000		

2. This application is for: ☐ AM ☒ FM ☐ TV

(a) Channel No. or Frequency	(b) Principal Community	City	State
88.1 MHz		Cambridge	MA

(c) Check one of the following boxes:

☐ Application for **NEW** station

☐ **MAJOR** change in licensed facilities; call sign: _____

☒ **MINOR** change in licensed facilities; call sign: WMBR

☐ **MAJOR** modification of construction permit; call sign: _____

File No. of construction permit: _____

☐ **MINOR** modification of construction permit; call sign: _____

File No. of construction permit: _____

☐ **AMENDMENT** to pending application; application file number: _____

NOTE: It is not necessary to use this form to amend a previously filed application. Should you do so, however, please submit only Section I and those other portions of the form that contain the amended information.

3. Is this application mutually exclusive with a renewal application? ☐ Yes ☒ No

If Yes, state:	Call letters	Community of License	State

88.1MHZ
BPED -920326IA WMBR
CAMBRIDGE MA
TECHNOLOGY BROADCASTING CORPORATION

SECTION VI – EQUAL EMPLOYMENT OPPORTUNITY PROGRAM

1. Does the applicant propose to employ five or more full-time employees? ☐ Yes ☒ No

If Yes, the applicant must include an EEO program called for in the separate Broadcast Equal Employment Opportunity Program Report (FCC 396-A).

SECTION VII – CERTIFICATION

1. Has or will the applicant comply with the public notice requirements of 47 C.F.R. Section 73.3580? DNA ☐ Yes ☐ No

The APPLICANT hereby waives any claim to the use of any particular frequency as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. *(See Section 304 of the Communications Act of 1934, as amended.)*

The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations, and that all exhibits are a material part hereof and incorporated herein.

The APPLICANT represents that this application is not filed for the purpose of impeding, obstructing, or delaying determination on any other application with which it may be in conflict.

In accordance with 47 C.F.R. Section 1.65, the APPLICANT has a continuing obligation to advise the Commission, through amendments, of any substantial and significant changes in information furnished.

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND IMPRISONMENT. U.S. CODE, TITLE 18, SECTION 1001.

I certify that the statements in this application are true and correct to the best of my knowledge and belief, and are made in good faith.

Name of Applicant	Title
Technology Broadcasting Corporation	President
Signature	**Date**
Todd Glickman	24 Mar 92

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The principal purpose for which the information will be used is to determine if the benefit requested is consistent with the public interest. The staff, consisting variously of attorneys, analysts, engineers and applications examiners, will use the information to determine whether the application should be granted, denied, dismissed, or designated for hearing. If all the information is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Accordingly, every effort should be made to provide all necessary information. Your response is required to obtain the requested authority.

Public reporting burden for this collection of information is estimated to vary from 76 to 80 hours with an average of 78 hours 04 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Office of Managing Director, Washington, D.C. 20554, and to the Office of Management and Budget, Paperwork Reduction Project (3060-0034), Washington, D.C. 20503.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

Section V-B - FM BROADCAST ENGINEERING DATA	FOR COMMISSION USE ONLY File No. _____ ASB Referral Date _____ Referred by _____

Name of Applicant

Technology Broadcasting Corporation

Call letters *(if issued)*	Is this application being filed in response to a window? ☐ Yes ☒ No
WMBR	If Yes, specify closing date: _____

Purpose of Application: *(check appropriate boxes)*

- ☐ Construct a new (main) facility
- ☐ Construct a new auxiliary facility
- ☐ Modify existing construction permit for main facility
- ☐ Modify existing construction permit for auxiliary facility
- ☒ Modify licensed main facility
- ☐ Modify licensed auxiliary facility

If purpose is to modify, indicate below the nature of change(s) and specify the file number(s) of the authorizations affected.

- ☐ Antenna supporting-structure height
- ☒ Effective radiated power
- ☐ Antenna height above average terrain
- ☐ Frequency
- ☐ Antenna location
- ☐ Class
- ☐ Main Studio location
- ☐ Other *(Summarize briefly)*

File Number(s) BRH-901128VJ

1. Allocation:

Channel No.	Principal community to be served:		
	City	County	State
201	Cambridge	Middlesex	MA

Class *(check only one box below)*

☒ A ☐ B1 ☐ B ☐ C3
☐ C2 ☐ C1 ☐ C ☐ D

2. Exact location of antenna

SECTION V-B – FM BROADCAST ENGINEERING DATA (Page 2)

4. Does the application propose to correct previous site coordinates? ☐ Yes ☒ No
If Yes, list old coordinates.

Latitude ° ' "	Longitude ° ' "

5. Has the FAA been notified of the proposed construction? ☐ Yes ☒ No
If Yes, give date and office where notice was filed and attach as an Exhibit a copy of FAA determination, if available.

Exhibit No.

No change in tower or antenna elevations

Date _____ Office where filed _____

6. List all landing areas within 8 km of antenna site. Specify distance and bearing from structure to nearest point of the nearest runway.

	Landing Area	Distance (km)	Bearing (degrees True)
(a)			
(b)			

7. (a) Elevation: *(to the nearest meter)*

(1) of site above mean sea level; 3 meters

(2) of the top of supporting structure above ground (including antenna, all other appurtenances, and lighting, if any); and 112 meters

(3) of the top of supporting structure above mean sea level [(a)(1) + (a)(2)] 115 meters

(b) Height of radiation center: *(to the nearest meter)* H = Horizontal; V = Vertical

(1) above ground 105 meters (H)

105 meters (V)

(2) above mean sea level [(a)(1) + (b)(1)] 108 meters (H)

108 meters (V)

(3) above average terrain 90 meters (H)

90 meters (V)

8. Attach as an Exhibit sketch(es) of the supporting structure, labelling all elevations required in Question 7 above, except item 7(b)(3). If mounted on an AM directional-array element, specify heights and orientations of all array towers, as well as location of FM radiator.

Exhibit No. Fig. 2

9. Effective Radiated Power:

(a) ERP in the horizontal plane 0.72 kw (H*) 0.72 kw (V*)

(b) Is beam tilt proposed? ☐ Yes ☒ No

If Yes, specify maximum ERP in the plane of the tilted beam, and attach as an Exhibit a vertical elevational plot of radiated field.

Exhibit No.

_____ kw (H*) _____ kw (V*)

*Polarization

17. For an application involving an auxiliary facility only, attach as an Exhibit a map *(Sectional Aeronautical Chart or equivalent)* that shows clearly, legibly, and accurately, and with latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.

(a) the proposed auxiliary 1 mV/m contour; and

(b) the 1 mV/m contour of the licensed main facility for which the applied-for facility will be auxiliary. Also specify the file number of the license. See 47 C.F.R. Section 73.1675. (File No.:_____)

18. Terrain and coverage data *(to be calculated in accordance with 47 C.F.R. Section 73.313).*

Source of terrain data: *(check only one box below)*

[X] Linearly interpolated 30-second database [ ] 7.5 minute topographic map

(Source: NGDC)

[ ] Other *(briefly summarize)*

Radial bearing (degrees True)	Height of radiation center above average elevation of radial from 3 to 16 km (meters)	Predicted Distances to the 1 mV/m contour (kilometers)
0	See page 12 in the engineering exhibit.	
45		
90		
135		
180		
225		
270		
315		

Allocation Studies

(See Subpart C of 47 C.F.R. Part 73)

19. Is the proposed antenna location within 320 kilometers (199 miles) of the common border between the United States and Mexico? [ ] Yes [X] No

If Yes, attach as an Exhibit a showing of compliance with all provisions of the Agreement between the United States of America and the United Mexican States concerning Frequency Modulation Broadcasting in the 88 to 108 MHz band.

Exhibit No.

20. Is the proposed antenna location within 320 kilometers of the common border between the United States and Canada? [X] Yes [ ] No

If Yes, attach as an Exhibit a showing of compliance with all provisions of the Working Agreement for Allocation of FM Broadcasting Stations on Channels 201-300 under The Canada-United States FM Agreement of 1947. Exhibit No. n/a

21. If the proposed operation is for a channel in the range from channel 201 through 220 (88.1 through 91.9 MHz), or if this proposed operation is for a class D station in the range from Channel 221 through 300 (92.1 through 107.9 MHz), attach as an Exhibit a complete allocation study to establish the lack of prohibited overlap of contours with other U.S. stations. The allocation study should include the following: Exhibit No. EE

(a) The normally protected interference-free and the interfering contours for the proposed operation along all azimuths.
(b) Complete normally protected interference-free contours of all other proposals and existing stations to which objectionable interference would be caused.
(c) Interfering contours over pertinent arcs of all other proposals and existing stations from which objectionable interference would be received.
(d) Normally protected and interfering contours over pertinent arcs, of all other proposals and existing stations, which require study to show the absence of objectionable interference.
(e) Plot of the transmitter location of each station or proposal requiring investigation, with identifying call letters, file numbers and operating or proposed facilities.
(f) When necessary to show more detail, an additional allocation study will be attached utilizing a map with a larger scale to clearly show interference or absence thereof.
(g) A scale of kilometers and properly labeled longitude and latitude lines, shown across the entire Exhibit(s). Sufficient lines should be shown so that the location of the sites may be verified.
(h) The name of the map(s) used in the Exhibit(s).

22. With regard to any stations separated by 53 or 54 channels (10.6 or 10.8 MHz) attach as an Exhibit information required in 1/ *(separation requirements involving intermediate frequency (i.f.) interference).* Exhibit No. EE

23.(a) Is the proposed operation on Channel 218, 219, or 220? [ ] Yes [X] No

(b) If the answer to (a) is yes, does the proposed operation satisfy the requirements of 47 C.F.R. Section 73.207? [ ] Yes [ ] No

(c) If the answer to (b) is yes, attach as an Exhibit information required in 1/ regarding separation requirements with respect to stations on Channels 221, 222 and 223. Exhibit No.

(d) If the answer to (b) is no, attach as an Exhibit a statement describing the short spacing(s) and how it or they arose. Exhibit No.

1/ A showing that the proposed operation meets the minimum distance separation requirements. Include existing stations, proposed stations, and cities which appear in the Table of Allotments; the location and geographic coordinates of each antenna, proposed antenna or reference point, as appropriate; and distance to each from proposed antenna location.

SECTION V-B – FM BROADCAST ENGINEERING DATA (Page 6)

(e) If authorization pursuant to 47 C.F.R. Section 73.215 is requested, attach as an Exhibit a complete engineering study to establish the lack of prohibited overlap of contours involving affected stations. The engineering study must include the following:

Exhibit No.

(1) Protected and interfering contours, in all directions (360°), for the proposed operation.
(2) Protected and interfering contours, over pertinent arcs, of all short-spaced assignments, applications and allotments, including a plot showing each transmitter location, with identifying call letters or file numbers, and indication of whether facility is operating or proposed. For vacant allotments, use the reference coordinates as transmitter location.
(3) When necessary to show more detail, an additional allocation study utilizing a map with a larger scale to clearly show prohibited overlap will not occur.
(4) A scale of kilometers and properly labeled longitude and latitude lines, shown across the entire exhibit(s). Sufficient lines should be shown so that the location of the sites may be verified.
(5) The official title(s) of the map(s) used in the exhibits(s).

24. Is the proposed station for a channel in the range from Channel 201 to 220 (88.1 through 91.9 MHz) and the proposed antenna location within the distance to an affected TV Channel 6 station(s) as defined in 47 C.F.R. Section 73.525?

[X] Yes [ ] No

If Yes, attach as an Exhibit either a TV Channel 6 agreement letter dated and signed by both parties or a map and an engineering statement with calculations demonstrating compliance with 47 C.F.R. Section 73.525 for each affected TV Channel 6 station.

Exhibit No. EE

See Narrative and Fig. 1.

25. Is the proposed station for a channel in the range from Channel 221 to 300 (92.1-107.9 MHz)?

[ ] Yes [X] No

If Yes, attach as an Exhibit information required in 1/. *(Except for Class D (secondary) proposals.)*

Exhibit No.

26. Environmental Statement *(See 47 C.F.R. Section 1.1301 et seq.)*

Would a Commission grant of this application come within Section 1.1307 of the FCC Rules, such that it may have a significant environmental impact?

[ ] Yes [X] No

If you answer Yes, submit as an Exhibit an Environmental Assessment required by Section 1.1311.

Exhibit No.

If No, explain briefly why not. See Narrative in Exhibit EE.

CERTIFICATION

I certify that I have prepared this Section of this application on behalf of the applicant, and that after such preparation, I have examined the foregoing and found it to be accurate and true to the best of my knowledge and belief.

Name *(Typed or Printed)*	Relationship to Applicant *(e.g., Consulting Engineer)*
William A. Culpepper	Technical Consultant
Signature William A Culpepper	Address *(Include ZIP Code)* 227 Farr's Bridge Road Greenville, SC 29611
Date March 24, 1992	Telephone No. *(Include Area Code)* (803) 246-3401

TECHNOLOGY BROADCASTING CORPORATION

WMBR

CAMBRIDGE, MASSACHUSETTS

APPLICATION TO MODIFY THE FACILITIES OF WMBR

ENGINEERING EXHIBIT

(EXHIBIT EE)

MARCH 1992

William Culpepper & Associates, Inc.
227 Farr's Bridge Road
Greenville, South Carolina 29611

TECHNOLOGY BROADCASTING CORPORATION

CAMBRIDGE, MASSACHUSETTS

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TECHNOLOGY BROADCASTING CORPORATION

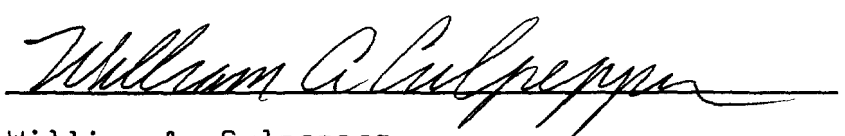
WMBR

CAMBRIDGE, MASSACHUSETTS

DECLARATION

I declare, under penalty of perjury, that I have prepared the attached Exhibit for Technology Broadcasting Corporation, and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief; and that I am a Registered Professional Engineer in the States of Alabama, Georgia and North Carolina.

Executed on March 24, 1992.



William A. Culpepper
227 Farr's Bridge Road
Greenville, South Carolina 29611
803-246-3401

TECHNOLOGY BROADCASTING CORPORATION

CAMBRIDGE, MASSACHUSETTS

NARRATIVE

This Exhibit supports the attached Application of Technology Broadcasting Corporation, licensee of Radio Station WMBR(FM). The purpose of the application is to increase the power and to add a directional antenna. No other changes are proposed.

The stations and allocations of concern in the reserved and non-reserved portions of the band are tabulated in the Channel Study on pages 4 and 5 of this exhibit. Non-commercial stations that required examination regarding overlap of prohibited signal strength contours are plotted on Contour Clearance Maps.

The proposed contours are tabulated at ten degree intervals, however the proposed contours and the contours of all FM stations and proposals are plotted in this exhibit using terrain data

If interference is encountered by any other Commission licensee as a result of a grant of this application, applicant agrees to discharge its responsibilities in correcting the problem in accordance with applicable FCC Rules.

The Proposed site is not in an area described in §1.1307(a)(1) through §1.1307(a)(4); the facility will not involve a significant change in the surface features of the land, the tower will not use high-intensity white lights at night, and there is no RFR hazard to humans at ground level when evaluated in accordance with OST-65. Therefore, this pro-proposal is excluded from environmental processing under §1.1306. The tower shown in this application is the tower that is now used by WMBR. If this application is granted, this same tower will be used without any change in height or location.

The proposal meets the "worst case" RFR requirement at the building roof. The radiation center of the antenna will be 11.9 meters above the roof. Power densities for various distances from the base of the tower, at an elevation two meters above the roof, are tabulated and shown graphically in this exhibit. The maximum combined horizontal and vertical power density occurs approximately two meters from the base of the tower and is less than 300 microwatts per square centimeter, which is less than 30 per cent of the amount allowed under the ANSI guideline.

This data was calculated from formulas in FCC OST-65 using EPA researched element and array patterns. The antenna modeled was a Phelps Dodge array of horizontal and vertical dipoles, a worst case example. The antenna that will be used will have more favorable characteristics than the antenna used in this example.

In consideration of occupational health and safety, the applicant states that it will limit the exposure of persons authorized to climb the tower by turning the transmitter off during the time such person is on the tower.

There are three "affected" channel six television stations. A contour clearance map is shown for stations WCSH, Portland, Maine and WRGB, Schnectady, New York. WMBR is located inside the 47 dBu contour of WLNE, New Bedford, Massachussetts, however, WLNE receives interference from WCSH at Portland. The proposed 48 dBu and 54 dBu contours that are inside the WLNE 47 dBu contour are inside the interference area caused to WLNE by WCSH. This is illustrated in Figure 1.

Under the terms of §73.525(e)(1)(iii) and §73.525(e)(1)(iv) this proposal will not cause channel six television interference to any person.

It should be noted that this application is mutually exclusive with the application of WIQH, Concord, Massachusetts (BPED-860424MC).

CH# 201A - 88.1 MHz
WMBR - CAMBRIDGE, MASSACHUSSETTS
INTERFERENCE CHECKS WITH WMBR, CAMBRIDGE, MA at N. LAT. 42 21 42 W. LNG. 71 5 3
PWR = .43 kW H.A.A.T. = 87 M C.O.R. = 108 M AMSL
Protected F(50-50) 60 dBu = 13.71 km
F(50-10) 40 dBu = 47.53 54 dBu = 20.53 80 dBu = 4.37 100 dBu = 1.45

CH# CALL	TYPE	* IN *	* OUT *	BEARING	DISTANCE	LAT.	PWR(kW)	INT(km)	PRO(km)
CITY	STATE	LICENSEE		<---		LNG.	HAAT(M)	COR(M)	FILE #
201A WESU	LI CN	103.7	99.6	235.5	158.34 km	41 33 16	1.50	40.94	11.21
Middleton	CT	Wesleyan Broadcasting Asso		55.5	98.39 Mi	72 39 30	12.0	96	BLED820216AE
201A WCHC	LI VN	29.0	8.1	257.0	61.31 km	42 14 15	0.10	18.58	5.64
Worcester	MA	College of the Holy Cross		77.0	38.10 Mi	71 48 31	0.0	195	BLED880916KA
FCC Comment > Vertical Polarization Only									
201A AP201	AP EN	24.7	5.4	199.1	59.15 km	41 51 30	0.15	20.78	6.24
Providence	RI	The Wheeler School		19.1	36.75 Mi	71 19 4	30.0	58	BPED880609MK
FCC Comment > Amended 900824 & 910125 & 910509									
201A WMBR.A	AP CN	-61.5	-61.3	0.0	0.00 km	42 21 42	0.44	47.81	13.79
Cambridge	MA	Technology B/Cting Corpora		180.0	0.00 Mi	71 5 3	87.0	108	BPED890712IA
FCC Comment > Application Dismissed 920123									
201A WMBR	LI CN	-59.1	-60.7	0.0	0.00 km	42 21 42	0.36	45.44	13.13
Cambridge	MA	Technology B/Cting Corpora		180.0	0.00 Mi	71 5 3	87.0	108	BLED890310KA
202A WRPS	LI CN	6.0	2.1	151.9	29.34 km	42 7 43	0.10	9.61	6.69
Rockland	MA	Rockland Public Schools		331.9	18.23 Mi	70 55 1	42.0	76	BLED861113KA
202A WGAO	LI CN	15.1	11.7	220.2	40.17 km	42 5 8	0.13	11.33	7.94
Franklin	MA	Dean Junior College		40.2	24.96 Mi	71 23 54	53.0	128	BLED810203AE
202A WQRI	LI CN	59.0	54.5	190.4	80.70 km	41 38 49	0.10	7.99	5.64
Bristol	RI	Roger Williams College		10.4	50.14 Mi	71 15 34	23.0	44	BLED890322KA
202A WBMT	LI CN	4.1	1.0	16.9	30.86 km	42 37 39	0.71	13.03	9.32
Boxford	MA	Masconomet Regional School		196.9	19.18 Mi	70 58 30	6.0	35	BLED1742
202A WJCF.C	CP CN	32.6	29.0	325.4	56.93 km	42 47 0	0.30	10.61	7.42
Nashua	NH	Nashu Educational B/Cting		145.4	35.37 Mi	71 28 42	22.0	94	BPED831104AC
202A WQRI.A	AP EN	53.3	50.3	190.4	80.46 km	41 38 57	0.80	13.41	9.61
Bristol	RI	Roger Williams College		10.4	50.00 Mi	71 15 34	23.0	44	BPED901023MI
202A WIQH.A	AP HN	1.9	-2.6	293.6	23.60 km	42 26 48	0.10	7.99	5.64
Concord	MA	Concord-Carlisle Regional		113.6	14.66 Mi	71 20 49	7.0	64	BPED860424MC
FCC Comment > FR CH 202D-APP 851105MA RET 860325-RESUB W/PET RECON & REQ NPT									

CH# CALL	TYPE	* IN *	* OUT *	BEARING	DISTANCE	LAT.	PWR(kW)	INT(km)	PRO(km)
CITY	STATE	LICENSEE		<---		LNG.	HAAT(M)	COR(M)	FILE #
203A AP203	AP	EN 61.6	67.1	160.0	77.15 km	41 42 32	0.10	1.82	5.64
Marion	MA	Tabor Academy		340.0	47.94 Mi	70 45 57	16.0	24	BPED891010MP
203B WFCR	LI	CN 74.3	50.2	270.1	110.32 km	42 21 49	35.00	22.29	55.73
Amherst	MA	University of Massachusett		90.1	68.55 Mi	72 25 24	219.0	400	BLED966
FCC Comment > GRANDFATHERED AT 35KW @ 219M HAAT									
204A WJMF	LI	CN 47.1	52.5	217.6	61.86 km	41 55 13	0.22	1.05	7.93
Smithfield	RI	Bryant College of Business		37.6	38.44 Mi	71 32 26	40.0	141	BLED810526AQ
i.f. RELATIONSHIPS:									
255A WSGQ.C	CP	CN 10.0 R	72.7 M	244.5	82.70 km	42 2 30	3.00	2.27	24.22
Webster	MA	Okun Broadcasting Corporat		64.5	51.39 Mi	71 59 18	100.0	287	BPH871113MC
254A WTSNFM	CP	CN 10.0 R	88.4 M	9.0	98.41 km	43 14 12	3.10	2.26	23.93
Somersworth	NH	Garrison City Broadcasting		189.0	61.15 Mi	70 53 47	96.0	149	BPH880126NY
FCC Comment > Erp exceeds the maximum allowed under international agreements-Proposed to canada as B1 on 901205-Accepted by canada on 901105 & 910415									

- Nearest CH 6 Grade B =WLNE at-16.66 km

Shively Labs, *a division of Howell Laboratories, Inc.*
BRIDGTON, MAINE 04009 (207) 647-3327
TWX 710-223-8910 SHIVELY BRGT FAX (207) 647-8273

Report of Test 6810-4R-DA
For
Technology Broadcasting Corp.
WMBR-FM, Cambridge, MA

OBJECTIVE:

The objective of this report is to demonstrate the directional characteristics of a 6810-4R-DA antenna to meet the needs of WMBR-FM and to meet the requirements of the FCC in accordance with the provisions of Section 73.316(b) of the FCC rules, the composite radiation pattern shall not increase at a rate exceeding 2.0 dB per 10 degrees from the azimuths of restricted radiation specified nor exceed a maximum to minimum ratio of 15 dB.

SUPERVISION:

The tests are carried out under the direction of Robert A. Surette, Manager of RF Engineering. Mr. Surette was graduated from Lowell Technological Institute, Lowell, Massachusetts in 1973 with the degree of Bachelor of Science in Electrical Engineering. He has been directly involved with both full size and scale model patterns measurements since 1974 as an RF Engineer with Shively Labs and with Dielectric Communications (a unit of General Signal) in Raymond, Maine. He is currently in Associate Member of the Association of Federal Communications Consulting Engineers and a Member of IEEE.

EQUIPMENT:

The scale model pattern range consists of a wooden rotating pedestal equipped with a position indicator. The scale model bay is placed on the top of this pedestal and is used in the transmission mode at approximately 20 feet above ground level. The receiving corner reflector is spaced 50 feet away from the rotating pedestal at the same level above ground as the transmitting model. The transmitting and receiving signals are carried to a control building by means of RG-9/U double shielded coax cable.

The control building is equipped with:

Wavetek Synthesized Signal Generator
Model 3510
Hewlett Packard Network Analyzer
Model 8505
Heathkit Chart Recorder modified to a polar recorder

TEST PROCEDURES:

The corner reflector is mounted so that the horizontal and vertical azimuth patterns are measured independently by rotating the corner reflector by 90 degrees. The signal generator was set to 466.65 MHz. The network analyzer is tuned to that frequency. Calibrated pads were used to check the linearity of the measuring system. For example, 6 dB padding yields a scale reading of 50 from an unpadded reading of 100 in voltage. From the recorded patterns, the R.M.S. values are calculated and recorded as shown in Figure 1.

Respectfully submitted by,

Robert A. Surette
Manager of RF Engineering
Inquiry No. 920653; cc: 880260
March 24, 1992

Figure 1A

TABULATION OF COMPOSITE PATTERN
WMBR-FM, Cambridge, MA

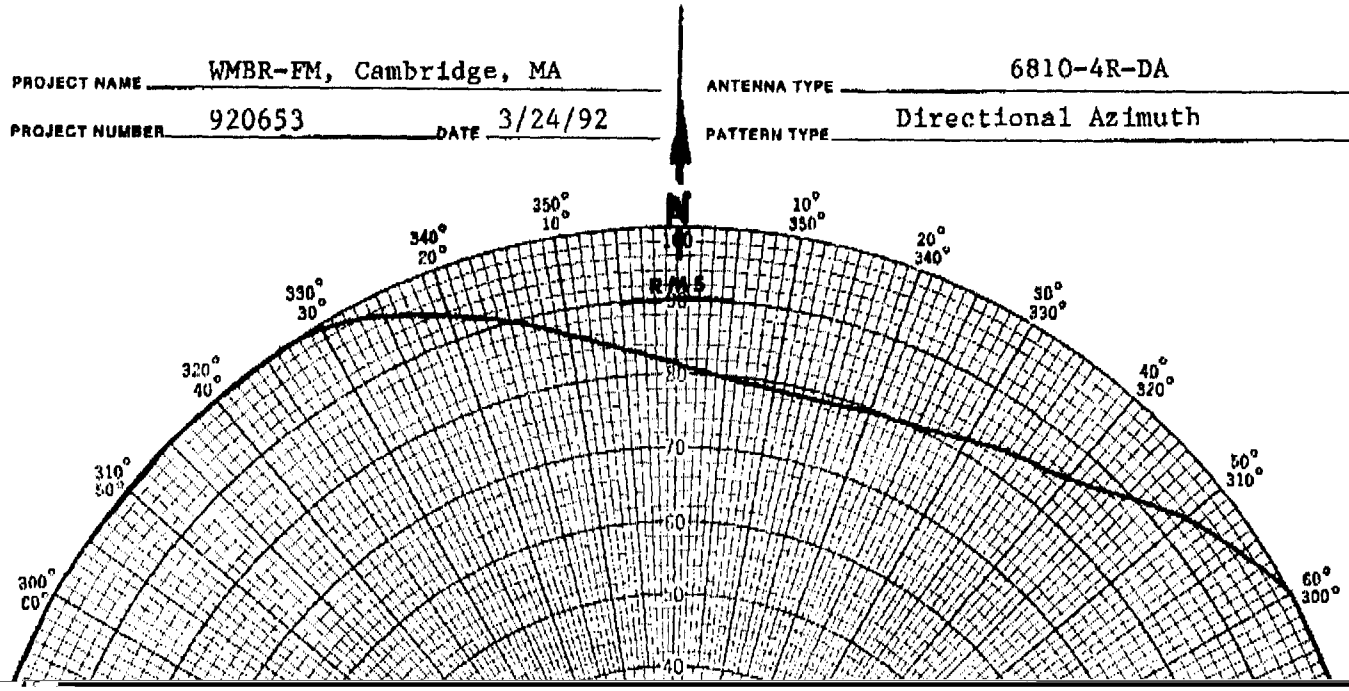
DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.815	180	0.665
10	0.790	190	0.695
20	0.795	200	0.750
30	0.820	210	0.830
40	0.860	220	0.965
45	0.890	225	0.995
50	0.935	230	1.000
60	1.000	240	1.000
70	1.000	250	1.000
80	1.000	260	1.000
90	1.000	270	1.000
100	1.000	280	1.000
110	0.975	290	1.000
120	0.875	300	1.000
130	0.750	310	1.000
135	0.705	315	1.000
140	0.685	320	1.000
150	0.680	330	0.995
160	0.665	340	0.935
170	0.660	350	0.865

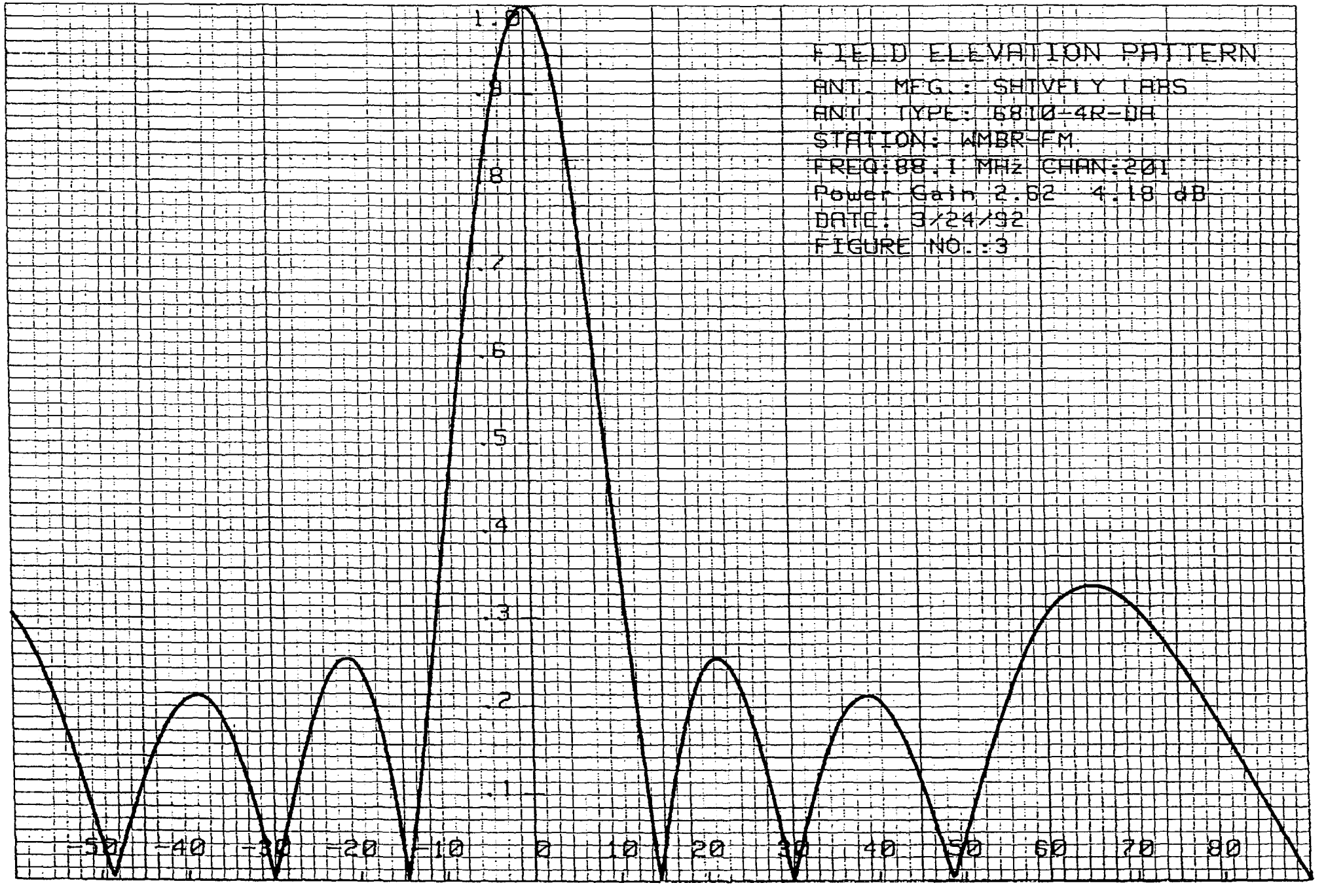
PROJECT NAME WMBR-FM, Cambridge, MA

PROJECT NUMBER 920653 DATE 3/24/92

ANTENNA TYPE 6810-4R-DA

PATTERN TYPE Directional Azimuth



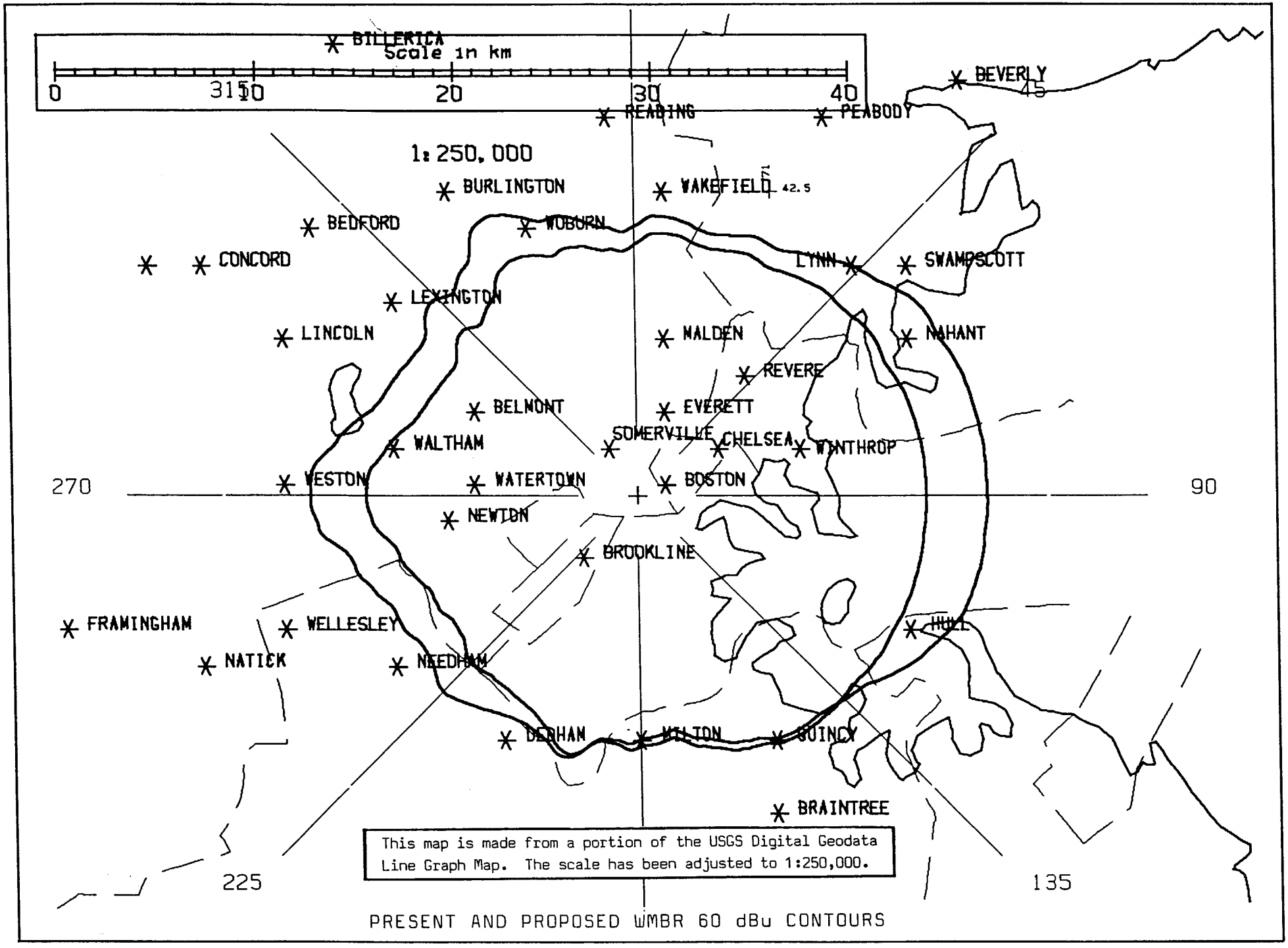

FIELD ELEVATION PATTERN
ANT. MFG.: SHIVELY LABS
ANT. TYPE: 6810-4R-DA
STATION: WMBR-FM
FREQ:88.1 MHz CHAN:201
Power Gain 2.62 4.18 dB
DATE: 3/24/92
FIGURE NO.: 3
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80

Predicted Signal Contours:

42 21 42 - WMBR - TECHNOLOGY BROADCASTING CORPORATION
71 05 03 - CAMBRIDGE, MASSACHUSSETTS

ERP = .72 kW,-1.427 dBk FM - 2-6 Tables

Radial	HAAT	kW	dBk	Field	60 dBu.5	100 dBu.1	80 dBu.1	54 dBu.1	48 dBu.1	40 dBu.1
0 Degs.	81.2M	0.478	-3.204	0.815	13.6	1.5	4.3	20.3	28.8	47.4
10 Degs.	89.7M	0.449	-3.474	0.790	14.1	1.5	4.5	21.1	29.9	48.7
20 Degs.	88.3M	0.455	-3.419	0.795	14.0	1.5	4.5	21.0	29.7	48.5
30 Degs.	90.9M	0.484	-3.150	0.820	14.4	1.5	4.6	21.7	30.7	49.9
40 Degs.	99.4M	0.533	-2.737	0.860	15.6	1.6	5.0	23.3	33.2	52.7
50 Degs.	102.7M	0.629	-2.010	0.935	16.6	1.8	5.3	24.8	35.4	55.2
60 Degs.	104.1M	0.720	-1.427	1.000	17.4	1.9	5.5	25.8	37.0	57.0
70 Degs.	107.1M	0.720	-1.427	1.000	17.7	1.9	5.6	26.2	37.5	57.6
80 Degs.	107.9M	0.720	-1.427	1.000	17.8	1.9	5.6	26.3	37.6	57.7
90 Degs.	107.9M	0.720	-1.427	1.000	17.8	1.9	5.6	26.3	37.6	57.7
100 Degs.	107.7M	0.720	-1.427	1.000	17.8	1.9	5.6	26.3	37.6	57.7
110 Degs.	108.0M	0.684	-1.647	0.975	17.5	1.8	5.5	26.0	37.2	57.1
120 Degs.	107.2M	0.551	-2.587	0.875	16.4	1.6	5.2	24.5	35.0	54.5
130 Degs.	105.9M	0.405	-3.925	0.750	15.0	1.4	4.8	22.5	31.9	50.8
140 Degs.	107.0M	0.338	-4.713	0.685	14.4	1.3	4.6	21.6	30.6	49.0
150 Degs.	105.3M	0.333	-4.776	0.680	14.2	1.3	4.5	21.4	30.2	48.5
160 Degs.	95.8M	0.318	-4.970	0.665	13.4	1.3	4.2	20.0	28.4	46.0
170 Degs.	80.7M	0.314	-5.036	0.660	12.3	1.2	3.9	18.0	25.8	42.3
180 Degs.	81.9M	0.318	-4.970	0.665	12.4	1.3	3.9	18.3	26.1	42.8
190 Degs.	81.3M	0.348	-4.587	0.695	12.6	1.3	4.0	18.6	26.6	43.6
200 Degs.	86.8M	0.405	-3.925	0.750	13.5	1.4	4.3	20.2	28.6	46.8
210 Degs.	72.7M	0.496	-3.045	0.830	13.0	1.6	4.1	19.3	27.4	45.5
220 Degs.	70.1M	0.670	-1.736	0.965	13.8	1.8	4.4	20.6	29.1	48.5
230 Degs.	66.1M	0.720	-1.427	1.000	13.6	1.9	4.4	20.3	28.7	48.3
240 Degs.	67.1M	0.720	-1.427	1.000	13.7	1.9	4.4	20.5	29.0	48.6
250 Degs.	72.5M	0.720	-1.427	1.000	14.2	1.9	4.5	21.3	30.1	50.2
260 Degs.	83.7M	0.720	-1.427	1.000	15.3	1.9	4.9	23.0	32.7	53.0
270 Degs.	95.1M	0.720	-1.427	1.000	16.5	1.9	5.2	24.6	35.2	55.4
280 Degs.	84.8M	0.720	-1.427	1.000	15.4	1.9	4.9	23.1	33.0	53.2
290 Degs.	68.7M	0.720	-1.427	1.000	13.9	1.9	4.4	20.7	29.3	49.1
300 Degs.	63.6M	0.720	-1.427	1.000	13.4	1.9	4.3	20.0	28.2	47.5
310 Degs.	69.0M	0.720	-1.427	1.000	13.9	1.9	4.4	20.8	29.4	49.2
320 Degs.	70.3M	0.720	-1.427	1.000	14.0	1.9	4.5	21.0	29.6	49.5
330 Degs.	89.3M	0.713	-1.470	0.995	15.9	1.9	5.1	23.7	33.9	54.1



PRESENT AND PROPOSED WMBR 60 dBu CONTOURS